Geophysical Research Abstracts
Vol. 15, EGU2013-8349-1, 2013
EGU General Assembly 2013

ENSO-like variability in the coupled climate model ECHAM-FESOM featuring an unstructured ocean component

Thomas Rackow, Dmitry Sidorenko, Tido Semmler, and Thomas Jung

Alfred Wegener Institute for Polar and Marine Research, Climate Dynamics, Bremerhaven, Germany
(thomas.rackow@awi.de)

We analyse the ENSO-like variability in the newly established global climate model ECHAM-FESOM. This is the first global coupled model with an ocean module supporting unstructured meshes.

The Finite Element Sea Ice – Ocean Model (FESOM) is a dynamical ocean model development at AWI Bremerhaven. In contrast to conventional ocean models, the spatial discretization is based on the Finite Element method. This method allows a variable spatial resolution of the triangular surface mesh with high mesh-stretching factors. FESOM has been used in numerous recent, yet uncoupled, studies. Its validation in the climate context is still ongoing activity.
ECHAM is a state-of-the-art spectral atmosphere model developed at the Max-Planck-Institute for Meteorology in Hamburg for climate modelling purposes. We apply the latest generation, version 6, with a T63L47 resolution.
FESOM and ECHAM are currently coupled by the OASIS3-MCT coupler and a structured exchange mesh.

We analyse two simulation runs that differ in the tropical ocean mesh resolution between 15°N and 15°S. Setup 1 uses a reference mesh with a resolution of about 1° in the tropics. In contrast, Setup 2 has a higher resolution of 1/4° (in a narrow band around the equator) that gradually decreases to 1°. Outside the tropics both meshes are identical. Modelled Nino3.4 indices are compared with observations and the influence of the mesh resolution is discussed.